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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/687,048	10/13/2000	Tae Heon Lee	AMKOR-052A	1120

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STETINA BRUNDA GARRED & BRUCKER  
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ALISO VIEJO, CA 92656

EXAMINER

NGUYEN, DILINH P

ART UNIT PAPER NUMBER

2814

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/687,048

Applicant(s)

LEE ET AL.

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 16-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 19-20.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16-18, 20-27, 29-33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (figs. 1-2) in view of Okumura et al. (U.S. Pat. 5942794).

- Regarding claims 16, 25 and 31, AAPA (figs. 1-3) disclose a semiconductor device comprising:

a lead frame 100 having:

a chip paddle 110 defining opposed top and bottom surfaces and a plurality of sides and corners; and

a plurality of leads 130 extending along at least one of the sides of the chip paddle in spaced relation thereto, each of the leads defining opposed top and bottom surfaces;

a semiconductor chip 105 mounted to the top surface of the chip paddle and electrically connected to at least one of the leads; and

an encapsulation material 10 covering the leadframe and the semiconductor chip such that the bottom surfaces of the leads are exposed in the encapsulation material;

the leads being configured such that the bottom surfaces thereof which are exposed in the encapsulation material.

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AAPA (figs. 1-3) fail to disclose the leads are of at least two different lengths.

Okumura et al. disclose a semiconductor device (fig. 6b, column 16, lines 55 et seq.) comprising :

a plurality of leads 23 being configured such that the leads are of at least two different lengths. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of AAPA (figs. 1-2) to provide enhanced adhesion between the sealing resin and the lead frame, resulting in a semiconductor device retaining high reliability, as shown by Okumura et al.

- Regarding claims 17, 26 and 32, Okumura et al. disclose the leads are segregated into multiple sets which extend along respective ones of the sides of the chip paddle in spaced relation thereto (fig. 5b).
- Regarding claims 18, 27 and 33, Okumura et al. disclose the leads of each set include at least two outer leads and at least one inner lead disposed between the outer leads, the bottom surfaces of the outer leads each being of a first length and the bottom surface of the inner lead being of a second length which is unequal to the first length.
- Regarding claims 20, 29 and 35, Okumura et al. disclose the first length of the bottom surface of each of the outer leads is less than the second length of the bottom surface of the inner lead.
- Regarding claim 21, AAPA (fig. 2) discloses wherein the bottom surface of the chip paddle is exposed in the encapsulation material.

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- Regarding claims 22 and 30, AAPA (fig. 2) discloses the encapsulation material 10 defines a generally planar bottom surface; the bottom surface of the chip paddle is generally planar and substantially flush with the bottom surface of the encapsulation material; and the bottom surfaces of the leads are each generally planar and substantially flush with the bottom surface of the encapsulation material.
- Regarding claims 23-24, AAPA (figs. 1 and 3) discloses the leadframe further comprises at least one tie bar 150 attached to and extending from at least one of the corners of the chip paddle, the tie bar defining opposed top and bottom surfaces, and wherein the bottom surface of the at least one tie bar is exposed in the encapsulation material.

3. Claims 19, 28 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (figs. 1-2) in view of Okumura et al. (U.S. Pat. 5942794) and further in view of Sabyeying (U.S. Pat. 6028350).

AAPA and Okumura et al. fail to disclose the first length of the bottom surface of each of the outer leads exceeds the second length of the bottom surface of the inner leads.

Sabyeying discloses a semiconductor device (fig. 7, column 5, lines 1 et seq.) comprising:

plurality of lead frames, wherein the leads are of at least two different lengths and wherein a first length of each of the outer leads 33 exceeds the second length of the inner leads. Therefore, it would have been obvious to one having ordinary skill in the art

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at the time the invention was made to modify the device of AAPA and Okumura et al. to increase adhesion and reduced lift off tendency, reduces adhesive contamination and manufacturing costs, as shown by Sabyeying.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (703) 305-6983. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

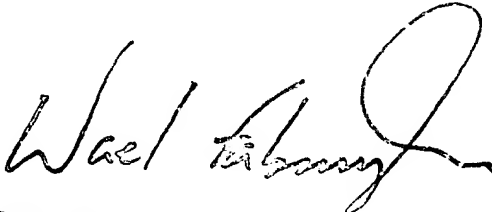
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN  
June 16, 2003

  
SUPERVISOR/EXAMINER  
TECHNOLOGY CENTER 2800